1. Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) The method of claim 44, wherein said biological molecule is entrapped within pores of the gel, and the activity of the biological molecule is retained.

2. (Previously Presented) The method of claim 1, wherein after the sol-gel is formed and before the sol-gel is crushed, the sol-gel is aged for about two weeks.

3. (Previously Presented) The method of claim 1, wherein after the sol-the gel is formed and before the sol-gel is crushed, the sol-gel is aged at a temperature of from about 4° C to about 40 ° C.

4.-8. (Cancelled).

9. (Previously Presented) A method for immobilizing a biological molecule in a porous inorganic matrix incorporated into a microanalytical device prepared according to the method of claim 44, said method for immobilizing the biological molecule comprising:

forming an aqueous composition comprising a tetraalkyl orthosilicate and a silane, wherein the silane is substituted with a C8-C24 alkyl group and substituted with at least two leaving groups selected from OR and halo, mixed with an acidified oxide salt solution;

adding to said composition an amount of the biological material in a physiologically acceptable-buffered solution wherein the resulting aqueous composition

has a pH ranging from about 6 to about 8.5, said aqueous composition becoming turbid on being transformed into a polymerizing hydroxide solution and transforming to a gel;

shaping the gel produced into a final form; and

aging the gel;

wherein said biological molecule is entrapped within pores of the gel, and the activity of the biological molecule is retained; and wherein the porous inorganic matrix is formed in situ.

10.-14. (Cancelled).

15. (Previously Presented) The method of claim 9, wherein the tetraalkyl orthosilicate is selected from the group consisting of tetra-ethyl orthosilicate, tetra-methyl orthosilicate, and combinations thereof.

16. (Original) The method of claim 1, wherein the sol is comprised of colloidal silica sol and a dissolved metal silicate.

17. (Original) The method of claim 16, wherein the metal silicate is sodium silicate.

18. (Original) The method of claim 1, wherein the sol comprises a tetraalkyl orthosilicate and a silane substituted with at least two leaving groups selected from the group consisting of OR and halo.

19. (Original) The method of claim 18, wherein the silane is substituted with a C_8-C_{24} alkyl group.

20. (Original) The method of claim 19, wherein the alkyl group is C_{18}.

21. (Previously Presented) The method of claim 18, wherein the tetraalkyl orthosilicate

is selected from the group consisting of tetra-ethyl orthosilicate, tetra-methyl orthosilicate, and combinations thereof.

22.-23. (Cancelled).

24. The method of claim 1, wherein the particle size of the sol-gel is selected to produce pores when the sol-gel is aged, said pores being of a diameter which is approximately the same as the diameter of the biological molecule to be entrapped.

25. (Cancelled).

26. (Original) The method of claim 24, wherein the pores have an average diameter ranging from about 1 nm to about 100 nm.

27. (Original) The method of claim 1, wherein the pores have an average diameter ranging from about 2 nm to about 50 nm.

28. (Previously Presented) The method of claim 9, wherein the pores have a diameter which is approximately the same as the diameter of the biological molecule to be entrapped.

29. (Original) The method of claim 28, wherein the diameter of the pores is less than the diameter of the entrapped biomolecule.

30. (Previously Presented) The method of claim 9, wherein the gel produced prior to crushing is shaped into forms selected from the group consisting of a monolithic gel, thin film, or fiber.

31. (Original) The method of claim 9, wherein the pores have an average diameter

ranging from about 1 nm to about 100 nm.

32. (Original) The method of claim 31, wherein the pores have an average diameter ranging from about 2 nm to about 50 nm.

33. (Original) The method of claim 24, wherein molecules having a mass of 3,000 Da or less can diffuse through the pores.

34. (Original) The method of claim 24, wherein molecules having a mass of 5,000 Da or less can diffuse through the pores.

35. (Original) The method of claim 24, wherein molecules having a mass of 10,000 Da or less can diffuse through the pores.

36. (Original) The method of claim 24, wherein molecules having a mass of 15,000 Da or less can diffuse through the pores.

37. (Original) The method of claim 28, wherein molecules having a mass of 3,000 Da or less can diffuse through the pores.

38. (Original) The method of claim 28, wherein molecules having a mass of 5,000 Da or less can diffuse through the pores.

39. (Original) The method of claim 28, wherein molecules having a mass of 10,000 Da or less can diffuse through the pores.

40. (Original) The method of claim 28, wherein molecules having a mass of 15,000 Da or less can diffuse through the pores.

41. (Original) The method of claim 1, wherein the biological molecule is selected from the group consisting of polynucleotides, enzymes, antibodies, coagulation modulators, cytokines, endorphins, peptidyl hormones, kinins, receptors, genes, gene fragments, cell fragments, membrane fragments, and solubilized membrane proteins.

42. (Previously Presented) The method of claim 41, wherein the enzyme is selected from the group consisting of RNase, DNase, telomerase, ligase, nuclease, ribonuclease; hydrogenase, dehydrogenase, aldase, amidase, aminotransferase, amylase, anhydrase, apyrase, arginase, aspartase, aspariginase, carboxylase, carboxypeptidase, catalase, cellulase, cholinesterase, acetylcholinesterase, deaminase, dextranase, dismutase, elastase, esterase, fumarase, glucosidase, hexokinase, isomerase, invertase, kinase, lactasee, lipase, lysozyme, malase, naringinase, oxidase, oxygenase, papain, pectinase, peptidase, pepsin, peroxidase, phosphodiesterase, phosphotase, protease, reductase, transferase, tyrosinase, urase, trypsin, chymotrypsin, hydrolases, isomerases, proteases, ligases and oxidoreductases such as esterases, phosphatases, glycosidases and peptidases, superoxide dismutase, tissue plasminogen activator, renin, adenosine deaminase, alpha-glucocerebrosidase, asparaginase, dornase-alpha, hyaluronidase, elastase, trypsin, thymidine kinase, tryptophan hydroxylase, urokinase, kallikrein, bromelain, cathepsins B, D, G, C, clostripain, endoproteinase Arg C, endoproteinase Asp N, endoproteinase Glu C, endoproteinase Lys C, Factor Xa, proteinase K, subtilisin, thermolysin, acyloamino acid releasing enzyme, aminopeptidases, carboxypeptidases, and pyroglutamate aminopeptidase.

43. (Cancelled).

44. (Original) A method of preparing a microanalytical device, comprising forming a sol-gel comprising an entrapped biological molecule, crushing the sol-gel to particulates having a diameter of from about 10 μm to about 80 μm, and forming the sol-gel particulates into a bed within the microanalytical device or on the surface of the

microanalytical device.

45. (Previously Presented) The method of claim 44, wherein the form of said sol-gel is selected from the group consisting of a monolithic gel, thin film, and fiber.

46. (Previously Presented) A method of using a microanalytical device prepared according to the method of claim 44, comprising applying an analyte sample to the bed, optionally applying additional buffer solution to the bed, and analyzing the eluant from the bed.

47. (Previously Presented) The method of claim 44 or 46, wherein the bed on the microanalytical device is in the form of a microcolumn or microchannel.

48. (Previously Presented)) The method of claim 44 or 46, wherein the bed on the microanalytical device is in the form of a microarray.

49. (Original) The method of claim 46, wherein the eluant is analyzed using mass spectrometry.

50. (Original) The method of claim 46, wherein the eluant is analyzed using micro or capillary electrophoresis.

51. (Previously Presented) The method of claim 46, wherein the interaction of any component in the sample with the entrapped biological molecule in the sol-gel is measured using a method selected from the group consisting of UV/Visible, Near IR, fluorescence, refractive index (RI) and Raman spectroscopies.

52. (Original) The method of claim 46, further comprising washing the sol-gel with a solution to elute analytes from the sol-gel, and analyzing the analytes.

53. (Original) The method of claim 52, wherein the analytes are analyzed using mass spectrometry.

54. (Original) The method of claim 52, wherein the analytes are analyzed using a method selected from the group consisting of UV/Visible, Near IR, fluorescence, refractive index (RI) and Raman spectroscopies.

55. (Previously Presented) The method of claim 44, wherein the microanalytical device is fabricated by a method selected from the group consisting of silicon micromachining, microlithography, molding and etching.

56. (Original) The method of claim 45, wherein the sol-gel is formed in situ on the microanalytical device.

57. (Cancelled).

58. (Previously Presented) In a microanalytical device comprised of a substrate and at least one feature selected from microchannels, microcolumns, and combinations thereof, the improvement which comprises incorporating into said at least one feature and/or onto a surface of the substrate a sol-gel having a biological molecule entrapped therein, wherein the sol-gel has been crushed into particulates having a diameter of from about 10 μm to about 80 μm and the particulates have been formed into a bed within the microanalytical device or on the surface of the microanalytical device.

59. (Previously Presented) The microanalytical device of claim 58, adapted for performing high throughput screening of samples.